THE
VETERINARY JOURNAL

Editor :
FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING,
OFFICIER DU MÉRITE AGRICOLE (FRANCE),
CAVALIERE DEI SS. MAURIZIO E LAZZARO (ITALY),
HONORARY MEMBER OF THE AMERICAN VETERINARY ASSOCIATION,
AND FORMERLY PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

Sub-Editor :
GLADSTONE MAYALL, M.R.C.V.S.

JUNE, 1926.

Obituary

SIR STEWART STOCKMAN, M.R.C.V.S.

THE whole profession will hear with great regret the news of the death of Sir Stewart Stockman, the chief veterinary adviser to the Ministry of Agriculture. Sir Stewart, who had not been in the best of health for some considerable time, had just returned from a visit to the Argentine, where he had been to study the question of foot and mouth disease and the possible dangers which might occur from the importation of meat into England from that country. That the suspicions of the carrying of the germs of this disease from one country to another by means of the importation of meat were not unfounded is shown by the fact that during the present month it has been proved that the carcases of pigs from Holland have directly transmitted the disease into this country, and the Government have already taken steps to prevent such a thing from recurring. It was hoped by those who knew him that the voyage to the Argentine might, in addition to the benefits which were expected to accrue from the knowledge gained to the country, have also been a benefit to Sir Stewart himself. The announcement of his unexpected death, when made by the President of the Royal College of Veterinary Surgeons at their annual meeting, came as a shock to those present. The good work which he has done for the profession is too well-known to need comment, and the present status of the Veterinary Department of the Ministry of Agriculture, together with the fine buildings which have been put up at Addlestone will be lasting testimonials to his memory. Qualifying in Edinburgh in 1890, and following Sir John McFadyean, his old teacher, as professor of Pathology, his training for the high position which he afterwards occupied was thorough and complete, and the firmness which he displayed during his arduous years of office as chief of the Veterinary Department of the Ministry deserve all the praise which can be given to him, for there is no doubt that had he but given way to the howlings of the Press against the policy of stamping out, this country would now have been in as unhappy a state in so far as foot and mouth disease is concerned, as those of our Continental neighbours. The sympathies of the whole profession will be given to Lady Stockman and her family, and also to Sir John McFadyean and Lady McFadyean.

General Articles

PUERPERAL FEVER.
A STUDY IN COMPARATIVE PATHOLOGY.

By LESLIE PUGH, B.Sc., F.R.C.V.S.,
Sevenoaks.

(15) *The Endemic and Epidemic Character of Puerperal Fever.*—The circumstances under which pregnant cattle and pregnant human beings associate with one another are widely different. Cattle run on the same pasture and are stalled in the same shed and fed on the same food. In cattle endemic foci are well known on particular farms. Human beings live individual family lives and it is only when they are closely associated in one building, as in hospital wards, that anything approaching an endemic focus appears.

The hospital wards of the old days and the calving box and yard of to-day alike provided endemic foci of puerperal fever. With regard to cattle we have some positive evidence that the infection which characterised such spots could be acquired some while before parturition and did not develop until perhaps it heralded the formation of some new focus on a hitherto healthy farm. Further evidence goes to show that this infection was of the coli group and that it did not of itself cause the acuter form of septic fever, but operated as a predisposing factor. This predisposition would appear to consist in a weakening of the body's power of resistance to a secondary septic infection commonly (even usually) incidental to the actual process of parturition.

That the coli infection is derived from contaminated food is inherently probable and that it gains access to the calf by the oral route is hardly in question—as witnesses the success of muzzling as a preventative, and the laboratory demonstrations of Jensen[10] and others.[17 19 20] We are thus in possession of no little information as to the causation and character of endemic foci of bovine puerperal fever.

But we have yet to enquire why hospital wards acted as endemic foci. The answer is, perhaps, to be found in the fact that sepsis was not understood or controlled, the relatively high infection rate (*i.e.*, serious infection) being due not to a specific predisposition, but to massive dosage of germs already rendered highly virulent by passage through others. It cannot be doubted that the hospital utensils of all sorts would continue to harbour the germs, however the actual clientele and personnel of the ward might change and this would

constitute a focus from which the disease might affect newcomers. Some such focus as this may perhaps be considered analogous to the contaminated calving boxes and yards which seem to harbour the bovine infection.

Passing now to consider the epidemic as contrasted with endemic features, we must confess to a great lack of information. The epidemics of puerperal septic fever have always been small and localised compared with those of the better recognised epidemic diseases, for example, foot and mouth disease, influenza, etc.

They have not been sufficiently extensive to invite enquiry into those dim cosmic factors which have fascinated the great epidemiologists or into questions of individual and racial predisposition, cyclic enhancement of virulence, etc.

It is thus scarcely necessary to discuss the epidemic as apart from the endemic character of the disease and it suffices to say that the characters are apparently the same in both bovine and human forms.

D. The Conclusion that the Diseases Treated of are Identical.

The writer has throughout this essay used the general term "puerperal fever" for both the human and bovine forms. It will have become apparent that this has been used, following the precedent of other writers, to denominate a form of septic metritis which usually gives rise to constitutional symptoms during the earlier part of the puerperium.

In so far as the available information goes, a detailed comparison of the factors determine the onset of this metritis in human beings seems to establish their substantial identity with those operating in cattle.

The bacteriology in the two cases seems to be very similar.

The course of the disease, in its two forms, appears to be identical in both cases.

The endemic and epidemic characters appear to admit of a like explanation in both bovine and human forms.

The writer concludes that the two diseases are identical, or that, at least, they are so similar that knowledge derived from the study of one may properly be tested by its application to the other.

It is now proposed to test this knowledge under two heads (1) portals of infection, (2) the existence of a puerperal diathesis,

E. (1) Portals of Entry of Infection.

That knowledge is desirable for its own sake is a proposition with which most practitioners of medicine (veterinary or otherwise) will

XUM

agree, but it is nevertheless very natural that the practical outcome of research should engage their most earnest attention. In connection with puerperal fever two things will be demanded with more insistence than others; firstly, some light on the vexed question of how the infection gets in, and, secondly, some hope of prevention or cure.

On the first of these the occurrence in cattle of a puerperal fever apparently similar in all essentials to that which affects human beings assumes immediate importance, since cattle pass through the pangs of labour unattended and unassisted.

The theory which supposes that puerperal fever is always regarded as caused by introduction of organisms by dirty hands and instruments cannot any longer stand in so bald a form. Yet this theory does not lack very cogent arguments in its support and to the consideration of these, attention must now be directed. It is assumed that the primary coli infection met with in cattle, but not so far identified in human beings, is carried by the blood or lymph stream to the placental site, is, in fact, autogenous. The infection whose portal of entry is now in question is a secondary infection of complex character, commonly streptococcal, but often mixed and complicated by the presence of numerous differing saprophytes.

There are three possibilities of importance, namely, (1) That the infection is introduced at the time of labour from outside; (2) That the infection is present in the uterus before labour commences; (3) That the infection is autogenous, *i.e.*, carried from some focus pre-existing in the body but not directly connected with the genital tract.

That the infection is introduced from without at the time of labour has been widely accepted. In support of it we have the knowledge that the circumstances in which labour is conducted amongst the poorest classes of the community make asepsis impossible. The difficulty of preventing contamination from the anus is also obvious. The fact that the disease has been both endemic and epidemic in lying-in hospitals supports the conclusion that it may be conveyed from one patient to another by the accoucheur. This view has the authority of most of the noted obstetricians who have written during the Listerian era.

Although the cumulative effect of such evidence seems overwhelming, a closer examination shows that, while it certainly suffices to establish the thesis that infection *may* be conveyed from without, it by no means establishes the proposition that it is ordinarily so conveyed. This latter could only be established as a fact if other methods of infection could be excluded. They have not been excluded and, indeed, little effort has been made to exclude them.

That they ought to be excluded is strongly impressed upon the student by two further considerations; firstly, that in cattle no manual interference occurs except in rare cases, and, secondly, that puerperal fever affects human beings in whom also every sort of manual interference was absent. In the light of these two facts we must either conceive of infection from without in the absence of manual interference or we must pass on to consider some other theory. The first of these two alternatives cannot be dismissed without examination. Organisms, of which some may well be highly virulent certainly exist on the skin in the near vicinity of the vaginal orifice. It is probable that the vagina itself harbours organisms in most cases. Is it, then, reasonable to suppose that these find their way into the uterus of their own volition or can be introduced by any movement incidental to the progress of normal unassisted labour? It does not seem to the writer that this possibility can be excluded. The process of expulsion of the fœtus entails a series of contractions and relaxations of the uterus. By the movement of the fœtal head it can be judged that the uterine contents are alternatively pushed forward and dragged back. It is not inconceivable that organisms might be aspirated into the uterus by this dragging back or suction movement even before the child or calf is born.

But after birth these movements are still in evidence, and the rising of the uterus in the abdomen after expulsion of the placenta is especially noteworthy. This rising is, as it were, a recoil after the last expulsive act. It is likely that it exerts considerable power of suction. The contractions associated with after-pains may have the same effect. One is thus led to suggest that infection may be transmitted from the vagina to the uterus by the aspiratory action set up by the alternate contractions and relaxations of the uterus. In this connection the following from Marshall's[16] "Physiology of Reproduction," p. 173, is of interest: "It is commonly stated that in man the passage of the spermatozoa from the vagina inwards is assisted by a contraction of the muscular wall of the uterus, which compresses the cavity of that organ into which the sperms are drawn when relaxation takes place—(Beck)."[4] Williams[33] suggests that: "During copulation a mucous plug which is ordinarily contained in the cervix may be temporarily and partially expelled into the vagina and afterwards withdrawn with the spermatozoa adhering to it."

Moreover, Heape[7] has shown that in the rabbit the passage of the spermatozoa into the uterus is probably assisted by a sucking action on the part of the latter organ. In cattle, if the placenta is partially retained, the cow strains periodically in attempting to expel it. During these efforts the membranes will often come out of the

cervix by about four inches and are then withdrawn again when the effort passes off. It is a matter of common observation that a placenta partially situated in the vagina will be extruded sufficiently during a strain to become contaminated with fæces and then be withdrawn, carrying a little of the latter into the vagina. It is obvious that secondary invaders can in this way gain access to the uterus of a cow already suffering from a mild metritis. It may be said that any such theory proves too much; that, if this movement of the uterus sufficed to introduce organisms, puerperal fever should be much more common than it actually is. But in point of fact a rise of temperature in the puerperium is so common that many practitioners (so the writer is informed) regard it as of no account unless accompanied by other symptoms prolonged more than one or two days. There would appear to be every reason to suppose that this common elevation of temperature (accompanied as it may be by malaise and perhaps suppression of the lochia) is just such a mild degree of puerperal fever as one might expect to meet if the uterus was infected in a large proportion of cases. In the light of the above facts and theories, it seems not unreasonable to claim that infection from without, either manual or auto-induced, may be responsible for the majority of cases of puerperal fever. Of the two ways in which it may be brought about there is, supposing auto-induction to occur, nothing to suggest that faults on the part of those attending a confinement have more than a small share in causing the disease. We must, however, consider what part, if any, is played by infection entering through still other portals. Williams[34] of Cornel University, has ably championed the view that infection of the uterus *prior to pregnancy* is the cause not only of puerperal fever but of abortion and other diseases. His opinion has yet to find any wide degree of acceptance in this country, but no one will deny that, granted pregnancy could occur in a uterus the subject of chronic infection, various accidents and complications might be expected. This is by no means the same as saying that puerperal fever is usually or even commonly to be explained in this way.

In human pathology a gonorrhœal form of metritis is met with which occurs as a puerperal fever, but it is not usually assumed that the gonococcus has lain dormant in the uterus. It may have been harbouring in the Fallopian tubes or cervix or in the folds of the vaginal mucous membrane and thence have obtained access to the uterus after parturition. Indeed, this view is that commonly held by gynæcologists.

Some writers[11 23] have suggested that the habit of continuing coitus during pregnancy might be responsible for the introduction of

organisms, since cultures from the prepuce have been found to yield streptococci in a large percentage of cases. This explanation would certainly not be valid for cattle. If bovine and human puerperal fever own a like causation, this factor at least is definitely excluded.

Pre-existing sepsis in the uterus or adnexa cannot be excluded as a possible factor in a certain percentage of cases, but this will hardly explain the presence in the uterus after parturition of various saprophytes—a feature which cannot be overlooked in any enquiry into the portal of infection.

That infection is autogenous, *e.g.*, derived from septic foci about the teeth, has been put forward by various writers in explanation of some cases at least. This suggestion has also been made in connection with many other disease processes. Dental sepsis is almost unknown in cattle; foci of infection (other than tuberculous) are infrequent outside the genital tract and one feels that this view of the source of infection cannot be accepted until some definite evidence is forthcoming.

Taking into consideration all the relevant features of puerperal fever, both bovine and human, it would appear that any satisfactory theory of the usual (not necessarily invariable) portal of infection must explain the following facts:—

(1) That infection can occur although there has been no manual or instrumental interference.

(2) That this infection may be multiple, including both pathogenic and saprophytic forms.

(3) That some degree of pyrexia (presumably due to a trivial metritis) is very commonly observed after parturition.

(4) That puerperal fever may appear in epidemic form, particularly in institutions and, amongst cattle, on particular farms.

With certain reservations dealt with later, the writer believes that these facts are best explained on the supposition that organisms derived from the alimentary canal obtain access to the uterus during or soon after parturition. It is possible that such organisms constitute a feature of the vaginal flora before parturition in many cases. They may find their way into the uterus during the passage of the hand or of instruments, but it seems necessary to assume the presence of some more constant factor than is so provided. Such a factor may be the suction action of the alternate contractions and relaxations of the uterus.

The reservations mentioned are as follows: This theory is not intended to explain infection which is already widespread at the time of parturition, such as the coli infection in cattle, and possible, gonorrhœal infection in human beings. These appear to be auto-

XUM

genous. Nor does the theory seek to explain epidemics. These are assumed to be due to the epidemic character of a predisposing coli infection in cattle. It is not known whether any such infection occurs in human beings or whether the human epidemics (which are characteristically institutional) are to be explained as examples of the ordinary hospital epidemics of sepsis which characterised the pre-antiseptic era.

For reasons already given the primary coli infection in cattle is explained as a blood or lymph channel infection for which the parturient uterus affords a locus minoris resistentiæ giving opportunity for its development.

E. (2) The Existence of a Puerperal Diathesis.

Many of the old clinicians (who wrote before the days of bacteriology) were of the opinion that women during the puerperium exhibited a departure from normal physiological behaviour sufficient to justify the expression "diathesis". Thus Trousseau[31] (1868) writes:—

> "They (*i.e.*, the physiological conditions of the pregnant and recently delivered woman) constitute a special morbid predisposition—a real diathesis."

We do not now employ the term diathesis with any frequency, but we cannot quite overlook the facts which it was intended to cover and which caused its former vogue. It was natural that the discovery of micro-organisms, able on inoculation to reproduce specific diseases (*e.g.*, anthrax) should lead Science to see in the anthrax bacillus a wholly sufficient cause for the disease known as Charbon, anthrax, etc. And although the corrective to this view was supplied by Pasteur himself, it was long before it enjoyed even the partial recognition which it has to-day, and it availed but little to prevent the disrepute into which the term "diathesis" fell.

The corrective mentioned above was supplied by the experiments which showed that the chicken was normally immune to anthrax, but could harbour a fatal infection if placed in cold water. The factor of chilling was then sufficient to constitute an anthrax "diathesis," a predisposition to suffer from anthrax. The inoculation of the bacillus was not alone sufficient to cause the disease. Causation was multiple.

Trousseau[31] defined the puerperal diathesis as "a special—a purulent—pathological condition," and appears to have conceived of it as exhibiting above all a peculiar liability to septic infection. The views of Semmelweiss[27] were similar. He did not know what septic infection was, but supposed that the noxious or toxic substances

which gave rise to constitutional symptoms were derived from the decay of discharges, etc. He recognised that the tendency to develop such particular form of decay might be transferred from patient to patient, but, even so, was obliged to confess that transferences from others could not explain all cases. It is probable that this fact coloured his conception of a puerperal diathesis. It was not only a liability to be infected by transference of "materies morbi" from others, but a liability to autogenous formation of these same substances.

Without unduly stressing the views of Trousseau and Semmelweiss, we may well proceed to consider certain points which do in fact suggest that puerperal cattle and puerperal human beings exhibit a diathesis. This diathesis may be defined as a liability to the development of various infections greater than can easily be explained by arguing that parturition affords unusually favourable opportunities for direct access of micro-organisms to the tissues.

We have already spoken of the only obvious example in human beings, *viz.*, the tendency to develop a coli bacilluria dependent on infection of the pelvis, of the kidney or of the bladder. The suggestion that this is due to pressure of the uterus will hardly explain post-parturient cases and is by no means a convincing suggestion with regard to others. It at least leaves it open to us to invoke a diathesis.

In cattle we have the coli infection of the placental site which seems in itself to exert some predisposition to secondary infections, and which can apparently be acquired some weeks previous to labour and yet not become active until parturition or immediately before.

The suggestion of Dryerre and Greig of a relative parathyroid deficiency during the first few days of the puerperium and the demonstration of a drop in blood calcium accompanying the onset of milk fever which occurs about the same period are interesting points on which to cogitate in this connection.

With such facts in mind it is difficult to avoid reflections on the possible existence of a puerperal "diathesis," *i.e.*, of some factor in the puerperal state which renders the body an easier prey to infection than it is at other times.

One feels justified in concluding that some such factor is present, nor need this conclusion cause surprise, since such factors are recognised in other spheres, for example, an inherited predisposition to rheumatism, asthma, urticaria, etc. The extraordinary fatal and widespread epidemics of measles amongst native populations (hitherto unaffected by the disease) present another example of the fact that the soil is scarcely less important than the infection.

It must be granted that we are still in almost complete ignorance of what exactly causes or constitutes a diathesis, but we may find in

the puerperal fever of cattle a clue which takes us some part of the way along the path of discovery.

It has already been noted that puerperal fever is apparently more frequently met with amongst the dairying breeds and is relatively less common amongst animals bred primarily to provide food in the meat market. The circumstances of conception, pregnancy and parturition are substantially the same in both cases, as are those connected with food and housing, with the following exceptions :—

(*a*) In the milk breeds, milking is carried on practically throughout pregnancy ; in the meat breeds only for a very short time.

(*b*) The milk breeds receive extra food of galactogogue nature, which may supply the need of protiens, fats and carbohydrates, but often fail in other respects.

The effect of this must be to denude the bodies of heavy milkers of many substances required for milk formation. Moreover, these same substances (particularly the salts) are also required by the calf and the latter seems to have a sort of physiological " first claim " on them, since they are obtained even to the extent of causing osteomalacia in the mother. For reasons which have been set forth elsewhere the writer[22] is inclined to lay especial stress on the deprivation of salts, and it is probable that this is at least one factor in causing a more marked " puerperal diathesis " in milk cattle.

Is there any comparable occurrence in human beings ? Is there any source of drainage from the system which renders the mother less able to cope with the infections of pregnancy ?

The writer cannot pretend to any authority on this (or, indeed, on any other) aspect of human bio-chemistry and nutrition. But it suggests itself as possible that the apparently increased liability to puerperal fever on the part of town dwellers should be related not so much to relatively less cleanly conditions of life, as to a relatively less suitable or less abundant diet.

In this connection the following statement by Longridge[12] is of interest :—

> " In *ill-nourished* women in the slums owing apparently to an insufficient uterine nerve supply the organ tends to become inert and the normal contraction and retraction interfered with and *post-partum* hæmorrhage occurs."

It does not appear that the fact that a mother works up to the last days of pregnancy has any important bearing by itself on the incidence of puerperal fever (Janet Campbell)[5] or one might have been tempted to suppose that a more vigorous maternal metabolism (comparable in some slight degree to the drain on milk cattle) could have been a factor in human beings. If, therefore, it be allowed that

a puerperal diathesis occurs, it seems not impossible that it will be found to depend in part at least on unsuitable feeding.

On the question of "diathesis" the writer therefore concludes:—

(1) That there are variations in susceptibility to infection which are not inaptly referred to as differences in "diathesis" and that an unfavourable variation of this sort is often associated with the puerperium.

(2) That the state of nutrition of the individual may be a factor in producing this unfavourable variation.

It follows that the discussion of puerperal fever as if it depended solely on the introduction of organisms at the time of parturition is apt to give an unbalanced view of the etiology of the disease, both as occurring in man and cattle.

HORSE TRANSPORT AND MOTOR TRANSPORT.*

By JAMES PATERSON, M.C.

(1) INTRODUCTION.—This paper only sets out to suggest some of the points that have to be thought of in considering whether, during the next year or two, we can expect the disappearance of the animal for drawing wagons from our cities for economic reasons, and to consider which cities might first experience the complete triumph of the engine, and why.

Any figures that may be given are not supposed to be actual costs, either to-day or at any time; but are used as illustrations only.

We must add, "provided the present costs do not greatly change relatively to one another," because costs have changed so much during the last few years.

Motor-cars that used to cost over £1,000 can be bought to-day for little more than half that sum. Commercial petrol was once obtainable at 5¼d. per gallon, and having been as high as 3s. 3d., is now a little over 1s. Tyres which used to cost 5d. per mile per car, last year cost under a penny.

Hay for horses has fluctuated between £3 and £15 per ton delivered in London; and maize between £5 and £23. Paint for vans from 2s. to 9½d. per lb.; and ironwork from £34 to £8 per ton.

(2) TRANSPORT GEOGRAPHY.—Old towns in countries like France, England or Spain grew up when animals were the only known mode of land transport. Many streets, like our Bond Street, Watling Street or Lombard Street, and in Seville, the "Calle de las Sierpes" or Kalver Straat in Amsterdam, may be unsuited to motor traffic,

* Summary of a Paper read before the Royal Society of Arts on April 28th, 1926.

and frontage values may be so high that widening can hardly be considered.

The question as to whether one can or cannot get a motor lorry to a warehouse in parts of London still arises to-day ; and the number of roads out of New York is so few and their width such that at times cars are so thick that there is hardly more space between them than there is between the ranks of a battalion whose march discipline is good.

Also in older cities there are still stables for horses ; the established railways and other carriers have their horses and vans and are naturally averse to the expense of " scrapping " them for something else without good cause shown. Also they have officers, servants and customers used to animals and used to working at the pace of the animal.

(3) EXAMPLES OF THE EFFECT OF ECONOMIC CONDITIONS ON THE PROBLEM.—In Paris there are said to be less than 1,000 horses. Is not that because Paris is a luxury City ?

In New York City I gathered that there were last year more draught horses in proportion to commercial motor lorries than there were in London, although, perhaps, less horses together (as statistics show).

(4) ILLUSTRATIONS FROM LONDON SUBURBS.—The differences between the old town and the new may be illustrated by examples from the London district.

Deptford is an old town ; situated about 4 miles south-east of London Bridge, with The Victualling Yard, and wharves on the Thames and on the Creek ; a thick population of daily wage-earners, dock hands, sailors and so on, some now living in what used to be charming old houses put up by James, Duke of York, for his Navy captains, when the Navy Yard was there.

It is surrounded by factories at Charlton and by the districts of New Cross, Greenwich, Lewisham and Lee with Blackheath not far off ; all built in the days of horse traffic.

Ealing, surrounded by Acton, Hanwell, Southall, etc., is at an intermediate stage ; it is a suburb of some standing with a main line railway on which it depended for many of its supplies from London, although many also came by road in the days of horses. This suburb has grown in the last 15 years in every way—factories and residences also, thick and fast, as electric trains made travel to and from London possible for the daily wage earners as well as for their managers and directors who in former days had it to themselves.

Wealdstone, Northwood and Pinner can be taken as a new colonisation of a piece of country ; quite different from the town planning of the great dukes of the London squares and of the town of Eastbourne !

(5) THE ACTUAL MEANS OF TRANSPORT WHICH MAY BE FOUND IN DISTRICTS ROUND LONDON, SUCH AS THOSE DESCRIBED ABOVE.—In a place like Deptford before motors were invented, one would have expected to find a carrier's depot with say 150 horses in good stables, the sort that are not readily convertible to motor garages. The clients of the depot were used to being called on by horse-drawn vans, and many of them would be so near the depot that hardly any time would be saved by a quicker moving vehicle. Horses can negotiate the narrow streets and the horses can easily be unhooked from one van and hooked on to another.

May I illustrate this point by the humble manure van?

Stables should be so arranged that manure is put straight into a van. That saves handling and saves the unpleasant smell of turning it over when heated. When full, a horse can easily draw it away and another van can be put in its place and then the full one can be drawn to the railway yard for conveyance to the country.

True, a mechanical horse could now do the same work, but who could tell me where to get one that would do it better or more cheaply? And could it back a van into place as accurately? Would there be any advantage in using a motor lorry with a removable body? Would there not be higher capital outlay, more complications and no saving?

At such a depot as is being described the number of horses means a continuous week's work for a shoeing smith. It would enable a horse-foreman to be employed with, say, 12 or more horsekeepers and the wheel-wright would have plenty to do. Shortly, overhead charges would be small "per horse."

Assume that for comparison we can take a man, with horse and van, to carry 25 cwt., as costing £300 yearly—that figure to include an allowance for sick horses, etc., and that for the work they do, two men share a third horse between them, say, £40 each or £340.

Assume that a man with a 40 cwt. motor-car costs £550 yearly, three such men and cars would be £1,650, carrying 120 cwt. at one time, that is, £50 less than five horse men at £340 (i.e., £1,700) and carrying 125 cwt. at one time. (I do not mean to convey that these are true costs, but they are given just to help the argument.)

Could the three men with motors do the work of the five horse men? remembering that the five vans are standing still, collecting or delivering about half their working day—leaving only the other half during which the greater speed of the car could count; also remembering that just near closing time, when all clients want the carrier's van at the same moment, the five horse vans can be in five places at once against only three with the motors.

Also with five men the carrier has five personalities working with him. Would he be wise to reduce those to three?

Further, if seven or eight horses and five vans were "scrapped" and motors bought (at a further investment of £1,200 capital) would any actual savings in overhead charges result, would not the "overhead" come out at more per horse on the reduced stud?

(6) THE INTERMEDIATE SUB-TOWN AT EALING AND ACTON.—Here one would have found a small carrier's depot established with horses before the motor came. But some of the outlying parts would have had pair horse vans serving them, sometimes with a reserve pair. There would probably be a clear case on yearly costs for changing to a motor, especially in a growing district, without reducing the number of men.

As the outer districts grew, motors would be added. As the near home district thickened up horses would be added. As factories grew up needing heavy deliveries rather beyond the range of the horse, electric cars would be introduced, and so we get a mixed fleet.

But this depot has to be visited, both by the veterinary surgeon and the mechanical engineer; it would need, say, a 2,000 gallon petrol tank and an electric transformer and to share a shoeing smith with another depot, so that overhead costs would be probably above their minimum.

(7) THE NEW TOWN.—Wealdstone and Northwood have grown up since the invention of motors, and it was therefore natural that the distribution equipment provided for that district should be motors, because it started as an "outside place" to a depot in one of the older suburbs. When it grew to need its own depot, an "all motor" depot would be installed, at a higher capital cost per unit of movement than ever before in the owning company's experience.

(8) WHAT IS THE SPHERE OF THE HORSE?—I am relying on the "discussers" of this paper to advise what to do in the condition described as "Deptford."

Is the horse still the most economical and efficient unit there?—or can a good case be made out for the raising of many thousands of pounds to "scrap" them? If so, what is recommended in their place and why?

(9) SPECULATION ON THE SPHERE OF THE ELECTRIC CAR.—In the intermediate suburb could not the electric do all the work?

Why not replace all horses by electrics, just a little bigger than the horse van and filled with batteries to carry them up to 20 miles a day during which they stop and start 100 times? These ought not to cost more than the horse and harness costs to buy; these electrics might be geared to go not over 15 miles per hour, and could the chassis

part be made to cost not more than does a modern horse van, one that is steel-covered with ball bearings, say £120, or little more—and at a cost for use of charging plant and electric current of less than the horse costs to feed? Is this too difficult a task to set the electric vehicle engineer?

Then, why not replace the petrol cars on the longer journeys by electrics? At a suitable point in their round they could have their depleted batteries withdrawn at a local charging station and replaced by freshly-charged batteries pushed into place by the power of an electric warehouse truck, on which it would be brought from the garage to the side of the car.

(10) Speculation as to the Sphere of the Petrol Car.—We have petrol engines of many sizes, and many horse powers. If we desire to substitute an engine for the power of one or two horses, can we not use one to put out just a little more energy than one or two good horses and to weigh and consume less than they do?

Could we not add a small petrol engine to a chassis not much different from a modern horse van with ball bearings and steel sides, etc., and adding to the cost of it even less than the horse and his harness; and costing less per week to operate than the horse does to feed, stable and keep?

If so, where is the sphere for the horse?

True, we should still have this buying of imported petrol, unless our native coal can be converted.

We must also consider the present agreement in this country as to wages between masters and men whereby a motor driver gets several shillings more each week than a driver of a horse drawing a similar load.

Can the small motor be just so much more efficient as to enable its driver to earn these extra shillings weekly?

(11) Conclusion.—I have spoken from the limited aspect of local distribution services, realising that the movement of large quantities between two points may raise different problems arising from the factors of time and distance, and also those of the amount that can be dealt with by one man. Everyone who travelled in an old horse omnibus will readily realise how many more passengers are dealt with by two men, both per hour and per mile, with a motor than ever were in the days of horses.

Little reference has been made to politics, which may be invoked for and against the animal on many grounds, but those who claim that street congestion is caused either by a slow-moving horse vehicle or a large motor lorry and trailer, should take into consideration that some traffic can only bear the low cost of cheap and slow movement,

whether by horse or lorry, and that political action to make that traffic move faster would result in something costing somebody more money than it now costs.

If anyone setting up transport equipment in a new town was flattering enough to ask my opinion as to whether I thought he wanted horses, I should say "Why? Have we not mechanical engines to produce any horse power from ½ to 1,000? What can the horse do for you that the motor cannot?"

"Yes," he might reply, "but for some of the jobs no car, petrol or electric, is made at present to do what I want without undue cost."

Is there sufficient demand for cars built to replace the horse, to enable them to be turned out "wholesale," i.e., is the demand sufficient to enable outsize and undersize motors to be advertised?

If someone who had horses in transport came and said that he thought of changing to motors, and asked for my advice, would not the reply be, "You must make up your own mind. If you are being persuaded by a motor salesman, or your own staff, or by seeing a competitor, take a holiday and think the thing out for yourself, and until you are absolutely sure, stick to your horses!"

OPERATIONS IN THE STANDING POSITION.*

Aside from the many minor operations upon large animals where recumbent restraint is never thought of in so far as the animal of average tractability is concerned, there is a group of procedures over which veterinarians still discuss preferment between standing and recumbent restraint. These are castration of "straight" colts, Williams' operation for roaring, plantar and digital neurectomy of the forefeet, teat operations upon cows, the extraction of molar teeth in horses, the resection of shoulder tumours, and others.

In the case of outlaws or any animal that develops outlawry as soon as liberty is taken with its usual freedom, there is no argument. That such animal must be roped, cast, and secured safely beyond the reach of injury to itself or the operator, no one disputes. It is only among animals of average tractability that opinions differ on this question. The strongest advocate of standing castration, who in New York would not hesitate to say that all horses should be castrated standing, soon changes his mind when he attempts the same trick on all horses west of the Missouri river, some of which would send him to Kingdom Come if he even got near enough to point his finger toward the flanks of the future gelding. Then, we have noticed

* The *North American Veterinarian*, October, 1925.

several of our old colleagues, once strong advocates of standing castration, gradually change their tactics when they had passed middle age and their quickness of mind and movements had slowed up a bit.

In the case of Williams' operation, we had always advocated recumbent restraint on the grounds that the striping process could be done better when not hampered by unexpected movements of the head which, even when trivial, often left us uncertain as to whether the job had been done well or not. But after having observed others back a roarer in a stall, lift up the head ceilingward with a rope, open the larynx and then twist out the mucous membrane of the ventricle with the burr, and do all of this quicker than it takes to tell it, we felt somewhat ashamed, swallowed what seemed to be an old prejudice, and decided to try out the standing operation. Everything went so well at first that we were compelled to confess in justice to our critics that the recumbent position was not a *sine qua non* of a roaring operation. Finally, however, our new confidence began to wane. We began to meet here and there horses operated upon in the standing position by ourselves and others that were not cured and upon opening up the larynx found that the operation had not been well done. In each case it was plain that the cause was the intractable horse, for in trying to invade the larynx again to make the exploratory diagnosis, its temper was exposed. Instead of stoically standing the pain even of the injection of the local anæsthetic these horses would move back and forth, toss the head up and down, not necessarily viciously but just enough to be annoying, and when attempt was made to invade the ventricle and draw up the mucous membrane lining it, these movements accentuated and in several instances prevented the work from being carried out to a successful end. So we went back to recumbent restraint, content to be old-fashioned.

Clinical Articles

THE RETENTION OF UTERINE FLUIDS.

By R. HUDSON, F.R.C.V.S.,
Retford.

APART from the retention of the fœtal membranes and their effects, we frequently have to deal with a condition due to the retention of blood, fluid, etc., which should have been expelled in the natural way before the closure of the os, and this may occur even when the act of parturition has been normal and the membranes expelled without delay.

Such cases are most frequently observed during the winter and early spring, when exercise is restricted or entirely prohibited, the want of it preventing the movement of fluids towards the os and their escape. Also, prolonged housing has a tendency to bring about a larger quantity of uterine fluids and so a larger and weaker uterine wall contraction being thus retarded though contraction of the os advances rapidly.

That contraction of the os may take place very rapidly is evident from the following instance :—

Three days after calving I was asked to cleanse a cow, and on entering the vagina I found the os so tight I could not penetrate with my little finger. Withdrawing my hand, I brought away a quantity of clear white mucus without a trace of smell. I thought she must have cleansed and that the afterbirth had been eaten by the patient or another cow. However, I was mistaken, for I removed the membranes a few days later through a naturally dilated os, which would admit my hand.

Looking back over a number of cases I find that they show a real variation in severity, milder ones recovering with but little attention, the severer types requiring prolonged treatment and nursing, and may sometimes die.

The disease usually occurs after the second or third calving, and symptoms develop from the second to the eighth week.

The most prominent symptoms are gradual loss of appetite until, in some cases it is complete, great loss of flesh, gradual loss of milk, complete or partial absence of rumination, grinding of the teeth, temperature not usually elevated, often subnormal, presence of a peculiar sweet smell in the breath, urine and milk so pronounced in most cases as to be noticeable on entering the stable.

The course of the disease may be as short as a few days, or prolonged over several weeks and ending in death or slaughter. In the latter type the cow gradually becomes weaker from want of food and shows rapid wasting.

Post-mortem examination shows remarkably little change in any organ except the uterus, the general aspect being one of starvation rather than disease.

The walls of the uterus are thickened, sometimes by infiltration of a clear serous fluid, while the interior may contain a quantity of reddish creamy fluid free from smell except that which has been peculiar to the breath, urine and milk. It is evident that some decomposing change has been taking place here, a different change from the usual one following the retention of the fœtal membranes.

The following case was a very extreme one :—

The subject was a well-bred shorthorn cow and a heavy milker. I treated her from the 7th to the 13th February, when near calving, for a bad impaction of the stomach from which she recovered and calved normally.

On the 14th March, four weeks later, I was called to see her again and found her very much wasted in condition—she was fat when she calved. It was reported that she had lost her appetite that day ; but she must have been losing flesh much longer, for she was now thin. The box had that peculiar smell which can be traced to the breath, urine and milk. She stood stretched out like a horse with laminitis, looked heavy about the face and drowsy. One eye was weeping slightly, the lid drooping, the iris contracted and there was a deposit of blood in the anterior chamber. There was no evidence of foreign body or injury. The blood vessels on the sclerotic were full ; but there was no inflammation of the conjunctiva. The pulse was fast (temperature 104), breathing accelerated, appetite and rumination suppressed. The urine was high coloured, plentiful and smelt sweet. After passing it she held her tail high and now and then jerked her hind quarters as though in pain or irritated. Walked out, she was stiff and unsteady and could not see well. Milk smelt.

There was no vaginal discharge and she had not shown any since the usual discharge a few days after calving.

Vaginal examination revealed a sticky yellowish secretion, the os was swollen and had a cyst on one side. It was completely closed.

I tried to pass a $\frac{3}{8}$-inch rubber catheter, but failed. So I passed one $\frac{3}{16}$-inch and injected about a quart of boracic acid and iodoform solution, allowing what would to return.

She was given internally :—

Ammon Carb	½ ounce.
Pot. Nit.	1 „
Water	1 quart.

three times daily.

On March 16th I found her improved, she lay cudding, had fed better, eye was better though still closed, temperature 104, stood on the stretch when up, smell in breath, and milk bad, jerky movement of loins still present, milked one gallon.

On March 18th she was still improving, eye less painful, cornea dull, a red aqueous colour, and a flocculent deposit in the anterior chamber, eye almost wide open and bore light better.

She still stretched and had jerky movements of the hind quarters. She carried her tail high. The smell was as strong as ever.

She had been rugged and put out in a sheltered paddock, where

she grazed a bit and walked steadier. Examining her vagina I found the sticky discharge still present. The cyst on the side of the os was larger and was lanced, a thin serous fluid escaping. I do not think it affected her in any way.

The os was penetrated as before and about a quart of boracic iodoform solution injected as before.

On March 20th the cow showed considerable improvement, she was now feeding and cudding well and the smell in the breath, etc., was much less noticeable. The pulse was 60, temperature 102½, and although she still stood stretched out her position was not so awkward. She looked thinner, but gave half gallon more milk. Her eye was better, but the aqueous tumour was still blood coloured and flocculi were still present at the bottom.

The uterus was not injected.

On March 22nd she was still improving, smell less noticeable, eye clearing, allowing flocculi to be easily seen at the bottom of the anterior chamber, temperature 102½, pulse 60.

The uterus was again injected as before.

Some days later she was found to be improving rapidly, the smell was absent from the box and only very faint in her milk. Improvement was from now very rapid and she eventually made a good recovery, both in condition and milk yield.

Case No. 2.—While attending a mammitis case I noticed the peculiar smell about the cow-house which I have come to associate with uterine sepsis and enquired if a cow was ill—there were several in the place. I was informed that they were all right. I made a casual examination and found nothing, but was rather puzzled. I was shown one cow which had been calved two days, but she was all right.

A week later I was called to a cow in the same place. She was a very good milker, had been calved three weeks, calving normal, and had milked up to her usual capacity—five gallons.

Two days before my visit she had been found with her leg over the chain and could not rise. She was lame from a separation of the hoof at the heel.

The owner thought her illness was due to her having been cast, but the cow showed the usual symptoms of uterine sepsis, viz., smell in breath, milk and urine, loss of cud and appetite, grinding of the teeth, loss of flesh, pulse 60, temperature 100° F. (never above for a week).

The treatment was the same as in the first case, and in a week she was feeding and doing well.

REMARKS.—The disease appears to be a toxæmia due to absorption of toxins from the uterus and in bad cases, such as the first described, to the invasion of the blood stream by some organism.

The eye was probably infected from the blood, for there was no evidence of external injury and at no time did the conjunctiva show such acute inflammation as would lead one to suspect it.

The solution of iodoform (1 dram) and boracic acid (1 ounce) in a quart of hot water stirred well and allowed to cool, was used because it is almost non-irritant: not much iodoform is taken into solution but sufficient probably to do good.

The ammon carb. and pot. nitrate are stimulant and diuretic, useful in removing toxins from the blood and alone have given good results in mild cases

All cases are benefited by being placed in fields, even in cold weather if well protected by rugging.

The catheter used was a piece of $\frac{1}{4}$-inch and $\frac{3}{16}$-inch acetylene gas tubing supported by a wire stilette up to $1\frac{1}{2}$ inches of the end, the latter being tapered off for about $1\frac{1}{4}$ inches. I have found it the easiest of all to pass and the least likely to do injury.

"GARGET."

BY J. G. HOBAN, M.R.C.V.S.,
Whitchurch, Salop.

PRACTITIONERS in purely dairy-farming counties probably look forward to the months of July, August and September with dread—not because of slackness of work or overwork, but because at that time comes along the *bête noire* of the Veterinary Surgeon and his client—mastitis, or as it is called in this area (the heart of the Cheshire cheese-making district) "garget."

It might be called the *bête noire*, because to the practitioner there is no condition where more unexpected and unsatisfactory final results are obtained. During a bad year 25 per cent. of the cattle may be affected, and not more than 20 per cent. of these ever return to the normal pre-disease condition. The actual deaths are few, but the losses through weakened and useless udders, etc., are enormous, and the best result one gets is a living animal giving less milk.

One hesitates to name any definite cause, but the weight of evidence seems to point to fly contamination, as it is during its season one meets with the vast majority of cases. No doubt the "ever ready" "chill" can be justly blamed in some cases, whilst in this district, where most of the land is drained into pits, animals standing in rank

pit water and splashing the teats with it are rendering themselves particularly liable to an attack—yet even on colder days when they do not so stand one finds the trouble. Whatever the reason all classes of milking stock seem subject to the dread affliction during the months named, and the cases met with are virulent compared with attacks found now (February), when most cases seem caused by carelessness in " drying off " the cow for spring calving.

Here, at any rate, garget might be classified as *severe and mild—an acute and chronic type* of each condition being met with. In the typical severe case one finds a high temperature, animal off food, one or more quarters of the udder intensely hard, hot and swollen ; whilst little or nothing can be drawn from the affected part, and any fluid obtained is straw-coloured and stinking—the milk of the other quarters is missing. There is little or no increase in the amount of discharge during the next 48 hours and death results despite one's best endeavours—the animal lying all the time, groaning and dying in convulsions. The more hopeful chronic type of this class shows itself by an increased amount of discharge and reduction in temperature, with a lessening of the hardness of the affected part which gives, in a day or two, a combination of straw-coloured fluid and clots. But should the fluid persist as such and not turn pus-like in character before a few days, secondary abscesses form, septicæmia sets in and death takes place in the course of a week or 10 days. Both these forms are locally known as " body garget."

In the milder acute form the animal is found to have a swollen painful " quarter " giving clotted milk, but the general health seems to suffer little, and the affected part returns to normal after a few " meals " with a full return to milk from the udder as a whole. In the chronic mild type (which is far the commonest) one finds one quarter (seldom more) giving a thick cream-like material which persists for weeks and weeks, unaffecting the rest of the milk supply and having little or no effect on the general health of the patient. In fact the affected quarter might be regarded as an abscess, and if drainage is not provided for the part bursts with some sloughing around the opening, though complete gangrene of the quarter is rare.

TREATMENT is difficult and unsatisfactory, as what gives good results in one case proves unavailing in the next, and beyond symptomatic doctoring, good nursing, and general hygienic measures, no particular rules seem to apply. My best results have been obtained by the free use of febrifuges followed by stimulants at frequent intervals, and the local application of Plasma Kaolini, which necessitates the use of a suspensory bandage, and seems more satisfactory than liniments or ointments, though collosol iodine oil has

been useful in some cases. Udder injections have proved a failure in my hands. Amputation of the teat is called for where the discharge is plentiful, but in acute cases, where there is little to be got away, it is inflicting additional pain. The main points in treatment may be noted as: constant "stripping" of the part, frequent renewal of whatever local application is used, combined with whatever drugs seem called for—full doses of tinct. aconite and the ammonia preparations seem as useful as any.

A NOTE ON A SEXUALLY ABNORMAL CAMEL.

By F. A. E. CREW, M.D., D.Sc., Ph.D.,

Animal Breeding Research Department, University of Edinburgh.

ALTHOUGH there exist no details concerning the sexual abnormality in this camel save those that are revealed by the photograph, it seems worth while recording the case, since, from what is known of exactly similar instances in cattle, the horse, the pig, the sheep, and the goat, it is reasonable to assume that this animal is a male in which, in consequence of a tardy development of the testes, the differentiation of the structures of the sex equipment remained imperfect. It can be stated with a considerable degree of confidence that in this case there were maldescended testes, and fairly well developed derivatives of both Müllerian and Wolffian ducts.

This note is published in the hope that it may sufficiently interest veterinary surgeons who have to do with camels, so that they may, whenever possible, enquire completely into the nature of such an abnormal individual. I am indebted to my friend, Mr. Rabagliati, F.R.C.V.S., D.V.S.M., for the photograph.

CASES OF TUBERCULOSIS OF THE SPINE, AND OF THE SCAPULA, IN THE PIG.

By D. J. ANTHONY, M.R.C.V.S., D.V.S.M.,
Veterinary Inspector, Messrs. Marsh & Baxter, Ltd., Brierley Hill, Staffs.

TUBERCULOSIS of the vertebra column in pigs is not uncommon, but meningeal tuberculosis is not often mentioned in veterinary literature. In the VETERINARY JOURNAL for November 1925, a case of tuberculosis of the spinal marrow in the pig is described by A. Chrétien (translation from *Rec. de Méd. Vét.*, 1925).

The case described by Chrétien is very similar to a case of spinal tuberculosis in the carcase of a pig which recently came under my observation.

The animal was a cross middle, and large, white pig, about nine scores in weight. Previous to slaughter this animal had been walked with others a distance of about 200 yards without showing any obvious locomotory difficulty. An examination of the lymphatic glands after slaughter revealed the presence of tuberculous lesions in the submaxilary, bronchial and portal lymph glands only. When the spinal column was examined after splitting down the backbone, a caseating tuberculous lesion was found in the body of the third lumbar vertebra, extending outwards towards the transverse process on the right side. From the last dorsal to the sixth lumbar vertebra the spinal cord showed a number of calcareous tuberculous granulations each about the size of a pin's head. On carefully lifting the cord out of the canal it was found that these granulations were present on the periosteum of the spinal canal and on the spinal dura mater; also in the region of the third lumbar vertebra, where the lesions were grouped to become confluent with the lesion in the body of the bone.

TUBERCULOSIS OF THE SCAPULA IN THE PIG.

Needless to say, the scapula is not examined in routine meat inspection, but recently in examining the split carcase of a pig in which tuberculosis of one of the dorsal vertebra was found, I had occasion to have the two sides removed from a rail on which they were hanging and placed on a table in the laboratory. When the left side was dropped on to the table the scapula was fractured. On dissecting the bone out carefully I found it was broken into two pieces about half-way up the blade. On examining the fractured surfaces, and sawing transversely through the bone in various places, I found that the anterior and posterior border of the blade, as well as the spine (from the Acromion Process to the Tuber Spinæ) was composed of a yellowish caseating material covered by a very thin, easily broken, layer of bone.

The only other lesion in this carcase affecting bone was one in the body of the 11th dorsal vertebra. Neither scapula on the right side, nor the other limb bones, showed no macroscopic evidence of tuberculosis.

COCCIDIOSIS IN AN ALSATIAN.

By JOHN HEATH, M.R.C.V.S.,
Kensington, West 14.

Subject.—An Alsatian puppy, six months old. The dog had been suffering from attacks of sickness and diarrhœa all the time the owners had had him. These invariably took the same form, starting with a white watery vomit, followed by thin watery diarrhœa containing a few bubbles. They had no apparent cause, though occasionally they followed the ingestion of dirty water, decayed buried bones or falling into the Round Pond. The temperature never rose beyond 102½. Food of all kinds was invariably taken, though sometimes for the first day it was refused. The spirits were seldom depressed, membranes remained pallid, with no suspicion of jaundice; peristalsis was audible; emaciation was sudden and intense; the attacks occurred about once a month and lasted about 10 days when Prof. Wooldridge was called in consultation and he was able to demonstrate the presence of coccidia in the fæces and the absence of eggs of Ascarides.

Treatment.—At first starvation for two days, followed by a diet of raw eggs, rice and suet pudding with raw meat and a mixture of Tr. Catechu. Chlorodyne and Sodi Bicarb., after a laxative dose checked the attacks but did not prevent their recurrence. Any form of arrowroot or dog biscuit in the food lengthened the attack. Morphia was most successful in diminishing the number of motions during the day, but had no effect whatsoever on their consistency. On analogy with the treatment in man and cattle (Maguire & Wynn Lloyd V.R., 1919) Ipecacuanha for its active principle. Emetine was tried, but emesis promptly followed. Pulv. Ipecac. Co. (Dover's powder) was substituted and this gave the best results, though afterwards pills containing—

Morph. Hydrochlor	$\frac{1}{18}$ gr.
Pulv. Ipecac	$\frac{1}{6}$,,
Pulv. Scillæ	1 ,,
Ext. Conii	$\frac{1}{4}$,,

t.i.d.

were as good. At this time the fæces were examined at the School of Tropical Medicine and found to be free from coccidia, but a weakness

was still left, the dog yet being subject to rare attacks of simple vomiting and diarrhœa that cleared up with gr. v capsules of chloretone and eventually the only treatment needed when last seen was a day's starvation. Most probably the dog would be quite healthy now, but he has left the country.

Since Finck first described the coccidia of dogs in 1854 it has been a recognised condition though seldom described clinically. There is some disagreement as to their classification, but Prof. C. Dobell, F.R.S. ("Parasitology," Vol. XI, No. 2, 1919) in a résumé of our present knowledge, classes all the coccidia of the dog together as *C. bigeminum.*

VOMITION IN THE DOG.

By J. G. WRIGHT, M.R.C.V.S.,
Cardiff.

One of the commonest conditions in the dog which one is called upon to treat, is vomition. It is met with in dogs of all ages, and its causes are both numerous and varied. Whilst in many cases the condition is due to some diseased state of the alimentary canal, there are others where it is due to reflex irritability, and it is therefore of the greatest importance that a very careful examination of the patient be made to locate the cause.

The following is a list of some of the conditions associated with which vomition is a symptom.

In Puppies.—Dietic errors at the time of weaning, frequently followed by a catarrhal gastro-enteritis. Infection with ascarides (especially when they migrate into stomach). Presence of quantities of foreign matter (pieces of coal, string, stick) in the alimentary tract during the period of teething. Intussusception. Distemper.

In Adult Dogs.—Cases of gastritis and gastro-enteritis of obscure origin: Stuttgart disease; irritant poisons; accidental swallowing of large foreign bodies (stones, rubber balls, coins, etc.); diseases of the kidneys.

In Aged Dogs.—Cases of gastro-enteritis (often associated with pyorrhœa, alveolar periostitis, dental tartar and fœtid mouths); chronic interstitial nephritis; presence of malignant growths in some part of alimentary tract, liver or kidneys.

Other Causes.—(May be met with in dogs of all ages.) Pyæmic conditions; purulent pleurisy as result of perforation of the œsophagus; peritonitis, post operative, accidental or as an extension from metritis, etc.; cystitis; cystic calculus; pyelo-nephritis; herniæ which have become strangulated; septicæmia.

It is impossible in a short article to deal with all the conditions mentioned above ; but they are all ones with which we are constantly in contact and must be borne in mind.

Those which I propose to write a few lines upon are :—

1. Cases of gastritis and gastro-enteritis in young dogs (usually between the ages of 6 to 18 months).
2. Cases of gastro-enteritis in aged dogs, usually of sudden onset and rapid fatal termination.
3. Presence of malignant tumours in some part of alimentary canal ; also chronic interstitial nephritis.

Gastritis and Gastro-enteritis.

I have recently come into contact with a number of cases in dogs usually between the ages of 6 and 18 months, in which the following have been the constant symptoms.

Complete inappetence, frequent vomition, diarrhœa, coating of the teeth and some pyorrhœa, fœtid breath ; temperature normal throughout.

There is no evidence of any contagion, and I have found that the cases invariably occur during a spell of cold weather with east winds. I conclude that these are cases in which cold is the factor causing the lowering of resistance which allows organisms which are probably normally saprophytes in the alimentary tract to acquire pathogenic properties.

I have found that the condition usually runs a course of four to six days, in which the animal loses much of his former condition. The so-called " cankered teeth " (loss of enamel) is a frequent sequel.

Cases of Gastro-enteritis in Aged Dogs.

In aged dogs I always regard the sudden onset of frequent vomition very seriously. In many cases it is the commencement of a train of symptoms which rapidly end in death (usually two to three days). These cases appear to be most common in toy dogs, especially those suffering from chronic pyorrhœa, alveolar periostitis, large accumulations of dental tartar, and loose teeth.

Vomition is very frequent ; the animal craves for cold water, which is immediately returned and insists on lying in the coldest place available. The animal becomes rapidly exhausted and soon dies.

Post-mortem examination usually discloses a diffuse active congestion of the pyloric portion of the stomach and the first part of the small intestine.

In these cases I consider that early attention to the animal's mouth would have considerably lengthened its life.

Malignant Tumours in the alimentary Tract.

This condition gives rise to a trend of symptoms similar to the preceding, but in these cases the animal survives a much longer period, often for weeks or months, gradually becoming greatly emaciated and death ultimately occurring from exhaustion. Careful palpation of the abdomen will often reveal the enlargement.

The occurrence of multiple metastatic neoplasms in the internal organs as the result of surgical interference with subcutaneous growths, gives rise to a similar series of symptoms, of which vomition and wasting are the chief.

Chronic Interstitial Nephritis.

This is a very common condition in old dogs, but I have met it in animals under two years old.

Mr. Livesey, in his paper on distemper, attributes it to this disease; but I am inclined to think that it is due to some more prolonged intoxication, and here again I am of opinion that a filthy mouth (assisted, probably, by errors in feeding—too much carbohydrate) is a likely cause.

The symptoms would appear to indicate the stomach as the seat of the trouble. Frequent vomition, gradual loss of condition, the animal eventually becoming greatly emaciated. The appetite is usually capricious. In kidney cases the animal becomes very dull; this is most marked.

Treatment.

In what might be termed the "mechanical" cases, e.g., dietetic errors, ascarides, presence of foreign bodies, etc., removal of the cause is the obvious treatment.

In cases where there is extensive disease of the kidneys, presence of malignant neoplasms, treatment can, at most, only be palliative, and the humane destruction of the animal is more desirable.

In cases where the condition is due to a true gastritis or gastro-enteritis, I have found the following useful. Small and often-repeated doses of bismuth carbonate in powder form (salol I consider useless, as it often, like the other saliglates, provokes vomition).

Brandy, in doses of 10 drops to a teaspoonful, diluted with a little milk and frequently given, is an excellent gastric sedative. Acid: Hydrocyanic (Scheele's) mi–ii is also good.

In acute cases of Stuttgart disease, and also the condition I have referred to in old animals, I have often found the only thing of any service to be cocaine hydrochloride gr. $\frac{1}{6}$-$\frac{1}{4}$ in a little water every three to four hours.

"On paper" "Dimol" is the drug that should be of great service in these cases, but I have not yet satisfied myself as to its value.

As regards feeding, if the animal is in good condition, I find it helpful to withhold food for 24 hours, allowing only a little cold water. (Care must be taken to prevent the animal drinking copiously. It will invariably do so if allowed.) Forcible feeding, I think, should be avoided as long as possible, and every effort taken to persuade the animal to take a little finely scraped, raw beef.

If forcible feeding has to be resorted to, I consider milk and white of egg, and virol the most useful.

I have used anti-colon bacillus serum in the treatment of Stuttgart disease, but without result.

It is to be hoped that the veterinary research institutions will be able, in the near future, to include some of the very obscure diseases of dogs in their work.

ENDOSCOPIC WORK ON DOGS AND CATS.*

By J. G. HORNING, D.V.M., and A. J. McKEE, D.V.M.,
Houston, Texas.

In the series of articles already published by us in *Veterinary Medicine*, we have described the technic as well as possible with the necessary instrumentation needed. We were especially honoured by Dr. Chevalier Jackson for some very clear pictures that should be invaluable to the beginner in getting him started in this work, and hereby offer them through the courtesy of *Veterinary Medicine*.

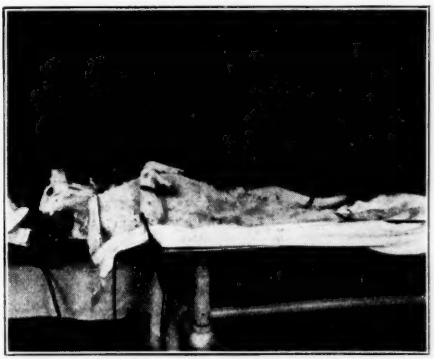


Fig. 1.—Mouth propped open with gag made of two large corks placed between canine teeth on left side of mouth.

* By kind permission of the Editor of *Veterinary Medicine*.

Dr. Chevalier Jackson has an international reputation for developing this work in humans and we recommend any who start to adopt its use in their practice to purchase his book, "Bronchoscopy and Esophagoscopy," published by Saunders.

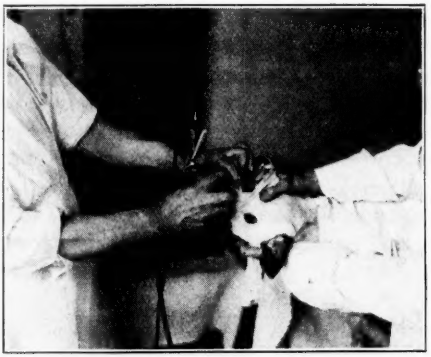


Fig. 2.—The bronchoscope has been inserted through the laryngoscope and is now in place in the dog's left bronchus.

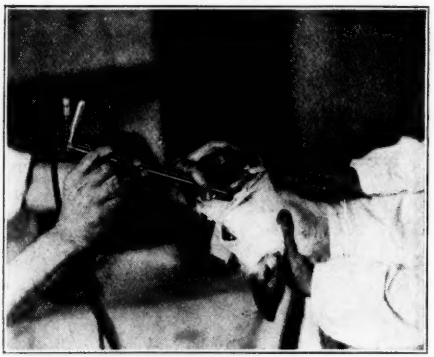


Fig. 3.—Introduction of the esophagoscope. This illustration shows the position of the bite-block made of corks and also illustrates the position of the esophagoscope in passing down the upper portion of the esophagus.

In our use of the instruments, we have removed foreign bodies from the trachea, bronchus, esophagus, stomach, larynx, and then have been able to put the instruments to a different use. The bronchoscope has been used to swab infected secretions from the bronchus

and spray with a medicated spray. This was used in chronic bronchitis and pneumonia. We have swabbed the trachea and bronchus after mechanical pneumonia was produced by the owner pouring castor oil in some cases, mineral oil in other cases, and recently lard, down the animal's trachea unintentionally by the animal resisting while the owner was trying to give it medicine. In these cases we have had a mortality of 25 per cent., which is very satisfying inasmuch as the mortality usually runs 100 per cent. in cases not treated.

We have used the esophagoscope in rectal examinations as well as vaginal examinations, and in bitches that have run out during their heat period with dogs to which their owners did not want them

Fig. 4.—The esophagoscope has passed through the hiatus esophagus into the stomach. For this passage through the lower portion of the thoracic esophagus and the entering of the stomach, it is necessary to have the dog's head low. In doing this, however, the esophagoscope is guided into the lumen as it is seen opening up ahead by the operator.

bred. We douche with Abbott's Chlorazene and make an entrance to both tubes of the uterus, painting with tincture of iodin.

In ear work we use the small bronchoscope and thus dispense with an ear speculum and still have an excellent instrument.

For our general work we are able to keep the instruments in daily use and relieve many conditions in our little patients that it would otherwise be impossible to do, at the same time rendering better service to our clients.

DOUBLE SACCULATED OESOPHAGUS IN A DOG.

By LOUIS SEWELL, M.R.C.V.S.,
*London, S.W.*1.

THE subject was a Sealyham Terrier about four years old, male, and when brought to my notice had been bad for nearly four months with sickness, which was intermittent in the early stages, but in the end practically always occurred after any food. Needless to say, the dog became very emaciated. Altogether seven Veterinary Surgeons saw it and a variety of diagnoses were given, such as gastritis, gastric ulceration, presence of a foreign body, acute indigestion and tuberculosis, but an X-ray photo showed that no foreign body was present.

The vomit resembled glycerine in consistency. The dog died, and upon post mortem examination I found that about an inch before the oesophagus joins the stomach the floor became divided into two sacs, each large enough to accommodate a pigeon's egg. These sacs communicated with the lumen of the oesophagus by very evenly divided slits, each large enough for a walnut to pass through. Both sacculations and their entrances were exactly the same size and in no way communicated with each other. They cannot have been formed by a foreign body, as they were symmetrical, and my opinion was that they were congenital.

As far as I can make out, the symptoms were caused by the food collecting in the sacs and becoming decomposed; as they filled up they overflowed into the stomach and this caused the sickness. However, it is extraordinary that the symptoms should not have occurred earlier in life.

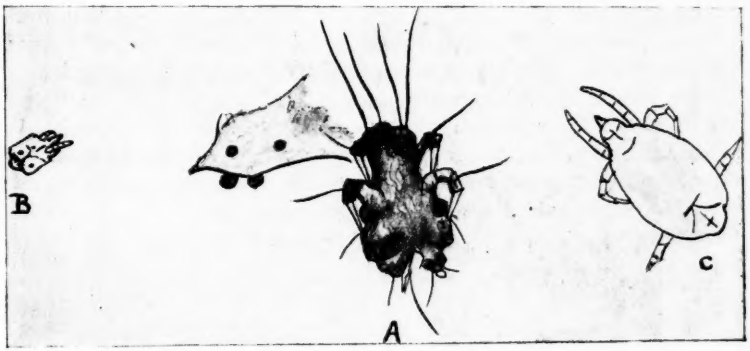
VENT DISEASE IN RABBITS.

C. J. DAVIES,
Lingfield.

A NOT uncommon complaint among domesticated rabbits is one known to fanciers by the name of Vent Disease. In Rayson's "Rabbits for Prizes and Profit" (2nd ed. pubd. about 1879), this ailment is called "Inflammation of the Uterus" and is said to be cured by the application of a sulphate of zinc and laudanum lotion. In the modern American book, "Rabbit and Cat Diseases" (Saunders, 1920), it is dealt with under the heading of "Contagious Urethritis and Vaginitis" and is described as a contagious catarrhal discharge which can be cured by weak solutions of potassium permanganate, etc. A Ministry of Agriculture Leaflet 327 (1923), says, "Vent Disease" is due to a microbe causing "inflammation and pimples on the sexual organs." In no French or German books on rabbits have I found mention of this disease.

Personal experience of this complaint has been very limited. A doe bought in 1917 developed within a few days the swelling and formation of scabs on the external genital organs characteristic of the disease. She failed to prove in kindle to a mating made before despatch and did not, indeed, breed until completely cured some weeks later. She was mated when still diseased and her complaint proved to be non-contagious. Several of the simple fancier's remedies were used with very little benefit, but the disease yielded almost miraculously to syringing with a three per cent. sulphate of zinc lotion.

A year or so later two does belonging to a neighbour were found to be suffering from the same symptoms. At home they lived in hutches cleaned out daily; but some weeks previously they had spent a few hours, while on a stud visit, in the very badly kept hutches of a local fancier, and it was after this that the disease was noticed.



A. Mite found in scrapings of Vent Disease identified as *Carpoglyphus anonymus* (female) with skin from which it has apparently emerged—magnified about 57 diameters.
B. Larva found in deep scrapings—magnified about 57 diameters.
C. Sketch of another form found in scraping intermediate in size and not drawn to scale.

Again a three per cent. sulphate of zinc lotion proved highly beneficial from the first application and soon completed the cure. No microscopic examination was made in either of above cases.

Since then no further cases have come within my personal experience until this year, although rabbits have been continuously kept and hundreds bred. The limited acquaintance with the disease left, however, some very definite impressions on the mind, one being that dirty hutches might be conducive, and that in any case the published descriptions were unsatisfactory and in no way conclusively proved

either the cause nor the true character of the disorder in every instance.

By the observance of some moist sanguinary stains on the floor boards of a hutch cleaned out daily it was recently discovered that an old doe which has been here for years and had been thin and peevish all the winter, was suffering from some trouble of this nature. The anus was enormously engorged, purplish and bleeding, with slight eversion. Scabs were present round the outside of the orifice and the whole part presented a most unpleasant appearance.

The sulphate of zinc lotion was so efficacious that in a few days the swelling had subsided sufficiently to cure the eversion. Scabs still remained outside, however, and it was thought advisable to examine these with the microscope. The presence of mites was at once revealed. That they were breeding there was proved by the fact that most of the finds were of immature forms, the presumption being that the adults had been destroyed by the earlier dressings. A few weeks later some adult mites were secured in the scrapings. A specimen sent to the authorities at the Natural History Museum has been identified as *Carpoglyphus anonymus*, a mite hitherto usually associated with dried fruit, etc., and which I have several times found swarming among prunes, sultanas and sugar. The trouble was finally cured with Friar's balsam.

A few weeks later, however, the complaint was found to have broken out again, this time on the external genital organs in the form of pimples developing later into scabs. The presumption was that mites had been left undestroyed in the surrounding fur and had started work on a part hitherto untreated by medicaments. Experience with mite diseases has shown in the past that treatment for as long as three months may be necessary to make a complete and lasting cure, so that it will still be some time before it will be safe to claim a perfect cure.

Coming so soon after the discovery of another Tyroglyphid mite, *Glycyphagus domesticus*, as the commonest cause of canker of the ear in rabbits, it seems that more strenuous efforts will have to be made in the future to prevent the animals from being attacked by this class of parasite. Experience suggests that curative agents which include glycerine seem to attract mites of this class and make a complete cure of canker most difficult. Olive oil and borax do little to allay inflammation in bad cases and sometimes lead to severe illness. Friar's balsam dries up the matter inside the ear and gives better and quicker results than anything hitherto used.

POISONING OF RABBITS WITH ENAMEL.

By G. MAYALL, M.R.C.V.S.,
Bolton.

A lady brought two dead Chinchilla rabbits, six months old, for post-mortem. After some preliminary enquiries she stated that she had been re-enamelling their feeding troughs and she feared the enamel was not properly dry before food had been put in the troughs. She said that the rabbits had gone off their food and died shivering and convulsed. After some research it was found that the base of enamel is lithopone and that this consists of zinc sulphide and barium sulphate. On opening the stomach there were five or six well-marked small round bluish spots on the mucous membrane of the surface of the organ.

A solution of the contents of the stomach answered to the usual tests for zinc.

SOME INTERESTING TORTOISE PATIENTS.

By HUBERT BUCKINGHAM, M.R.C.V.S.,
Norwich.

Case 1.—A small tortoise, with a scapula of a small rabbit wedged in its throat, broad end downwards. Owner had tried to extract the bone with pliers and had broken the small end off, so there was no part of the bone outside the mouth. I tried to keep the head outside its shell with a piece of tape, but I believe its neck would have been dislocated had I continued to pull. I packed cotton wool behind head and round neck and so was able to manipulate head, but my next trouble was to open its jaws. I tried leverage and slightly cracked its horny lips. Help ! what next ? Why ! chloroform. Try it.

He went under very nicely ; and the muscles of neck and lower jaw relaxed so that I readily extracted the obstructing scapula.

There was too much hæmorrhage for my liking, but the patient recovered and during last summer came when his mistress called " Johnnie " to pick bigger bones, but I do not think " Johnnie " will have any small ones given him again.

Until that day I should have given an opinion that a tortoise was *purely* a vegetarian.

Case 2.—March 1st, 1926. Another tortoise was brought to me—the owner has two, kept in the house during winter.

The owner opened *its mouth* quite easily with her *finger and thumb* and kept it open, exposing a tongue very white in its appearance, due to a thick coating of epithelium—the other one had a tongue quite clean and pink in colour. I put some Ung. Acid Boric (B.P.

strength) into its mouth and sent a box of it home for owner to repeat the dressing.

This patient has recovered.

CASE 3.—Yet another tortoise. This one was brought to me because it had a large number of parasites in the rugæ of the skin, inside the shell at both extremities. These were ticks.

I applied some iodoform powder (1 in 9) and sent some for further applications.

In seven days' time the little patient was absolutely rid of its visitors.

Abstracts and Translations

CALCULI OF THE KIDNEY IN THE COW— TWO CASES FROM PRACTICE.*

BY DR. E. JOSS,
Veterinary Surgeon, Zaziwill.

CASE 1.—A dun cow, about eight years old, in good condition.

History.—In the autumn of 1918 I examined this cow, at the owner's request, for tuberculosis, but she was not tuberculous. On June 25th, 1919, she showed violent, sudden and continuous colicky pains. The owner gave her a drench, but there was no improvement and the following day he sent for me to examine the cow.

She was in as good a bodily state as in the autumn of 1918, but had suffered for 24 hours from severe colic. Slightly increased pulse; no fever. On examination per rectum I found the left kidney of normal size and not painful on pressure. In the right ureter about midway between the right kidney and the bladder I found a firm roundish body as big as a chestnut. The ureter was apparently not blocked by this, since urine could still pass through it. The bump was not movable by the hand in the rectum.

Diagnosis.—A kidney stone fixed in the right ureter.

Prognosis.—Bad. *Advice.*—Slaughter.

Post-mortem.—The left kidney normal. The right kidney greatly increased in size and of greyish colour. A complete renal calculus had formed in roundish cavities which pressed on the kidney capsule and made its cortex visibly thinner at certain parts. The slightly thickened pelvis of the kidney and all calculus cavities contained urine, gravel and innumerable urinary calculi up to a hazel nut in size. The largest urinary calculus was in the right ureter between kidney and bladder. The mucous membrane of the ureter

* *Schneizer Archiv. f. Tierheilhim de Nov.* 15*th*, 1925.

was abraded and reddened for about 1½ inches as if there had been to and fro movement of the calculi. The bladder was normal.

It is interesting to note that this large stone had been washed out of the kidney; further that the left kidney was normal, so that in the autumn of 1918 there were no symptoms that could justifiably be attributed to nephrolithiasis.

CASE 2.—A white cow, seven years old, in rather good condition.

History.—At the beginning of 1922 the cow at times had slight attacks of colic and then for the first time passed some reddish urine which contained no flocculi, but on standing there was a deposit of a thin layer of red blood corpuscles. The symptoms did not seem to point to the ordinary pyelonephritis and I gave a diagnosis of "commencing kidney stone." The cow received drenches of stomachics, aromatics, uvæ ursi and salicylic acid. The urine became normal in colour and colic disappeared. But during the year the urine again showed traces of blood which disappeared with the previously-adopted treatment. The cow had calved each year, bringing her fourth calf on the night of January 22nd-23rd.

On January 27th, 1925, I found retention of the cleansing the cervix uteri being completely blocked by a tough mucous plug as thick as a child's arm. Manual removal. On examination per rectum I found a kidney stone as big as a ball of worsted in the pelvis of the left kidney.

On January 28th the cow showed symptoms of milk fever. After some doubt as to whether this was not a uræmia with resultant coma, I adopted the usual milk fever treatment, whereupon the cow recovered from this illness after showing slight indigestion. The owner now hoped to milk the cow for a long time and then to fatten her.

February 17th, 1925.—Indigestion again with slight tympany.

February 20th.—Commencing loss of flesh, slight indigestion. The stone in the left kidney has become larger and stones are now discernible in the posterior part of the kidney. The urine shows a slight slimy sediment with very little trace of blood. Slaughter.

Post-mortem.—Everything normal except the kidneys. *Left Kidney:* Weight (with stones), 3¼ lbs.; weight without stones, 1 lb. 8 oz.; one large stone weighed 6½ ozs. and was from the pelvis of the kidney.

Right Kidney: Weight with stones, 3½ lbs.; the largest stone in the kidney about 3½ ozs.; weight of the stones, of which there were several, without gravel, 7½ ozs.

Besides these two cases I have several times been able to diagnose kidney stones per rectum, the caudal end of the left kidney being like a small sack filled with stones and grating on pressure.

UTERINE TORSION AND SYMPTOMS OF INTESTINAL OBSTRUCTION IN THE COW.

By M. TRIBOUILLARD*
Veterinary Surgeon, Vic-sur-Aisne.

I was called on October 7th by a client to a cow showing colic. It was a Normandy cow pregnant with third calf, due to calve in about 15 days. The owner had bought it and did not know the exact date of future calving.

The animal was in good condition, slightly blown and colicked, weak straining to defecate. The cow was not prepared to calve, as shown by the state of the vulva, the ischiatic ligaments and the udder. Fœces passed in small quantities since previous day. Completely off food, no rumination.

I gave a purgative. Next day I was sent for again. The cow was no longer blown, but no fœces had been passed, colic continued and the animal kept getting down and up.

No alteration as regards calving, I explored her rectum and found this empty and nothing abnormal. The womb seemed a considerable size, but I could not feel either the head or legs of the calf. No fœtal movements.

I made a vaginal exploration to assure myself that *there was no twist of the uterus*. My arm passed easily into the vagina, which did not appear to me greatly stretched. There was no folding and I could easily touch the os uteri, which was pervious to two fingers.

To sum up, there was nothing abnormal; the animal was not ready to calve and no torsion of the womb—I gave a strong saline purgative.

There being no improvement on the morrow the animal was slaughtered.

There was a large amount of reddish peritoneal fluid. The uterus was an enormous size, distended with fluid, violet-coloured *and above all twisted on itself in front of its neck.*

The calf was a very big one, not eruphysematous, weight about 121 lbs.; it was floating in blood-tinged fluid amidst huge blood clots.

The animal not being ready to calve on my arrival I could only surmise the cause of the constipation, and thought it might be due to constriction of the intestine by the broad ligaments, as in the case recorded by Soulié. There seemed to be two twists, and the womb was too lacerated by the cuts of the knife to admit of careful examination. (The butcher had cut it open quickly with the idea of getting a live calf.)

* *Recueil de Méd. Vét.*, December 15th, 1925.

I considered the weight and volume of the calf was the cause of the accident, and the cause also of my error in diagnosis, as by reason of the length of the vagina I was unable to palpate rectally beyond the neck of the womb.

NOTE ON BACILLUS ABORTI IN THE COW.*

J. M. BUCK & G. T. CREECH.

THESE authors have attempted to overcome B. abortus udder infection by repeated subcutaneous administration of B. abortus bacterin. After a carefully carried out and controlled series of experiments, they have concluded that repeated injections of B. abortus vaccine, in which the organism had been killed by heat, did not prove to be of practical value in overcoming udder infection in cows.

Eight of a group of 15 cows with udders infected by Bact. abortus produced milk capable of infecting guinea-pigs for approximately two years.

Variations in the quantity of milk produced by a Bact. abortus udder-infected cow, provided the animal is milked daily, did not markedly affect the agglutination reaction of the milk whey.

The blood serum of cows which have acquired infectious abortion may react strongly to the agglutination test for at least a year after the disappearance of the infection from the udder, as indicated by guinea-pig inoculation tests.

Abstracts of Current Literature

Staheli, A.—Ovarian Implantations in Presenile Cows.—*Schweizer Archiv f. Tierheilkunde,* Oct. 15th, 1925.

SINCE May, 1922, I have carried out 51 implantations in cows with the object of regenerating them and making them useful dairy cattle. The indication for doing the operation was the premature cessation of œstrum (presenile condition). The implantation was carried out where drug and physical therapy failed, and in many cases where the natural physiological forces did not awaken in youth. My first thought was to use especially active ovaries such as are present in cases of nymphomania. On this account and because material was handy, I transplanted several ovaries from such cows without considering their pathological condition. I soon found that the effect did not always come up to my expectations, and so later on I only implanted healthy, active ovaries from healthy slaughtered animals, the ovaries being taken away aseptically.

* *Journal of Agricultural Research.* Vol. XXXI, No. 7. Oct. 1925.

After shaving a piece of skin the size of the palm of the hand on the right side of the neck and painting with tincture of iodine, an incision 3 to 5 centimetres long is made vertically through the skin, the subcutaneous tissue separated obtusely, so that a ledge occurs on which a whole ovary or occasionally part of one can be placed. Hereafter the wound is closed according to the rules of surgery. The removal of the sutures takes place after 5 to 8 days. In by far the greater number of cases healing takes place *per primam*. The best guarantee for primary healing is the taking away and incorporation as quickly as possible of body warm aseptically taken and kept sutured in ovaries. The transport of the ovaries from slaughtered or castrated animals must be undertaken by putting them in a thermos flask of physiological salt solution at body heat. The implanted ovaries apparently disappear in from six to eight weeks ; palpation, however, shows that small hazelnut to button sized structures remain. Objectionable results never arise. That in the choice of ovaries tuberculous ones must be avoided is self-evident.

The experimental results were submitted to the Annual Assembly of the Swiss Naturalist Association in October, 1924, and were closed at the end of May of the current year (1925). It was naturally of great importance to establish whether the effect of the implantation was exhausted with the occurrence of œstrum. I have kept the treated cows well under control and observation, and have convinced myself that a greater number not only conceived and brought forth healthy, lively calves, but after parturition again and again came on heat and became pregnant. Of 51 cases, 46 equal to 90 per cent, came on heat. In five cases no effect was produced.

Of these 46 cows which came in season, two had been consigned for slaughter on account of small milk production, as well as a $2\frac{1}{2}$ years old well-bred cow whose ovaries and uterine horns were so small that they were difficult to find. For eight months she had not been in season, and as a result unsuitable and repeated efforts had been made to open the cervix and indurations had occurred hindering conception. There remain, therefore, 43 animals, of which 31 have conceived, or 72 per cent. Of these, six cows at this time are in the early stages of pregnancy (ascertainable by rectal examination). Of the remaining 25, 19 have brought forth live calves, two have aborted at 16 and 22 weeks respectively, and two died from disease.

Sixteen of these 19 cows came in season again ; one cow soon after parturition had a so-called blight, whilst two showed no heat, in spite of a repeated implantation. One of these 16 productive cows was cast by the owner for foul in the feet, although she came in season regularly.

The 15 remaining animals have all conceived a second time and seven have calved, and seven are in calf, and one which is doubtful has been sold.

These trials show that we are in a position to help nature, which should always be the object of every therapy, and indicate to us the necessity in our general therapeutic treatment, and especially in the treatment of a conception, of following practical physiology.

Jonquieres, Dr.—Eczema of Man and Animals and its Treatment by Hepatic Opotherapy.—Thesis for the Veterinary Doctorate, Toulouse, 1925.—*Rev. Gén. de Méd. Vét.*, Nov. 15th, 1925.

THE author admits that eczema is the result of a deficiency of the antitoxic function of the liver and the pathogeny is illustrated by the following equation: eczema = digestive toxins + hepatic disturbance + cutaneous anaphylaxia. He seeks to demonstrate this by the results of opotherapeutic treatment. Eczematous men and dogs are cured after a course of extract of liver in pills. The treatment of eczema in the dog is as follows:—

1. Régime: mixed diet; meat and vegetables; discard sugar; exercise and life in the open air. In the morning a tablespoonful of coffee with sulphate of soda.

2. Local treatment: alibour water applied three times daily to allay itching.

3. General treatment: hepatic opotherapy dried pulp; extracts in powder or solution. In the dog and horse fresh pulped ox liver.

Four observations in man, 15 in the dog, and two in the horse.

Treatment of Chronic Nephritis in the Dog, by *V.R.*, pp. 668-671.—*Revue Gén. de Méd. Vét.*, Nov. 15th, 1925.

THE impossibility of diagnosing exactly by ordinary clinical means, functional diseases of the kidneys necessitates an omnibus therapy, chiefly dietetic, in which the following principles are indicated:—

It is just as well before any treatment is advised that the owner should know that under the most favourable circumstances a definite cure cannot be counted on, at any rate when the disease is of some time standing.

Two chief points may be stated—

1.—*Avoid introduction into the system in the food of substances which are badly eliminated by the kidney and which may by their accumulation have a harmful action on this organ.*

In principle three elements ought to be forbidden with more or less strictness according to the severity of the nephritis: *chloride of sodium*, on account of its hydropigenous action; *azote*, which appears

XUM

at times to cause uræmia ; *water*, which combines with salt to cause œdemas.

(*a*) *Dechlorided régime.—Milk* is the best food ; it only contains 1·50 grammes of sodium chloride per litre ; besides it is digested without leaving toxic residues in the intestine and is a pronounced diuretic.

Lactic diet must not be followed indefinitely and exclusively ; it is weakening ; sometimes after a period, it is badly tolerated ; finally, it introduces into the system much albumen and much water.

Therefore, use milk as a cure for five to eight days each month. Give according to size, ¾ to 1 litre of raw milk, or boiled and cooled, skimmed for preference. It may be given pure, or better with the addition of a third of a weakly alkaline mineral water (Vichy-Celestin, Vals St. Jean), or a quarter of lime water.

In the interval unsalted bread may be given, biscuits, rice cooked with water or milk, *chocolate* and cereal decoctions. In strong patients with no symptoms of azotemia prescribe fresh cheese and *a small quantity* of raw meat.

(*b*) *Hyponitrogenous or hypoazoted régime.*—Foods poor in proteins are : *potatoes, rice,* tapioca and analogous products, the fats, *sugar* (jam).

Most patients stand small quantities of herbaceous legumes (carrots, turnips, leeks, green haricot beans) as used at table, or as soups or pastes.

On the other hand, fish, dry vegetables, and above all *eggs* ought to be forbidden.

(*c*) *Drink.*—Almost always a dog affected with chronic nephritis shows intense polydipsia. One should not encourage this tendency to drink by inconsiderate giving of diuretic solutions. Contrary to what is often believed, these decoctions do not wash out the kidney. Water in excess is retained by the renal barrage and causes œdema by hypertension, which hastens the ruin of the myocardium. Do not fall into the other extreme, except in the case of œdemas where great reduction of liquid is necessary, otherwise great reduction of liquid diet hinders the kidney from fulfilling its depurative office.

Therefore, keep a middle course. Give very pure waters : boiled water, rice water, Pougues, Evian, Thonon water. Do not give them at discretion, but in *small quantities* often repeated (a glassful every three hours). Check the patient from drinking at pools or brooks.

2.—*Arouse the Functions of Diuresis.*—Contrary to what one might think, diuretics ought to be forbidden, even in cases of polyuria. In these, in fact, the urine eliminated only contains small quantities of urea and chlorides.

One will call to aid--

(*a*) *Dechloriding Diuretics.*—The best is *theobromine,* which may be given in a dose of ½ to 3 grammes for five to seven days. One can also use old nitrate of potash—½ to 1 gramme—which is not absolutely harmless, or better chloride of calcium, 1 gramme. Very active and well tolerated.

(*b*) *Azoturised Diuretics.—Lactose* should be given in daily doses of 10 to 20 grammes. A good prescription is—

Theobromine .. 1 gramme.
Lactose .. .. 10 grammes.

To be given well mixed in half a glassful of milk and given each morning on five occasions. At the end of five days discontinue the treatment for a like period.

3.—*Some additional indications* are often useful :—

(*a*) Stimulate the cutaneous functions which supplement to a certain degree the renal deficiency, by frequent frictions with a hair-brush and strong eau de Cologne.

(*b*) To the same end excite the intestinal functions periodically with mild purgatives, calomel, infusion of senna, manna fat, etc.

(*c*) Finally, to combat cardiac insufficiency so often associated with chronic nephritis, we may bleed lightly and repeatedly at the vena saphena and give 15 centigrammes of powdered digitalis as infusion.

Rational medication of chronic nephritis ought to be borne in mind. Urinary antiseptics such as benzoate of soda, salol, camphor, uroformin should be reserved for acute cases. Salts of strontium and alkaline iodides are useless and at times dangerous. Chloride of calcium is safest and best.

Fetscher, Dr. J.—Biology of the Acarus Mite and the Therapy of Acariasis—Inaugural Dissertation Giessen.—*Deutsche Tierarzt Woch,* April 17th, 1926.

The vitality of the hair sac mite in scab material at room temperature (12–15° C.) was in water 25 days, in damp air 12 days, in dry air three days. Vitality is extinguished if the temperature is kept at 37° C., in water at two, in damp air at one, and in dry air after 24 hours.

Both sarcoptic and dermatocoptic mites survive some time in damp air and a cool temperature, whilst they die quickly in dry air and higher temperature. Length of vitality in water appears to

XUM

prove that the acarus needs the oxygen of the atmosphere in the same proportion as the other mites in order to live, and that respiration through stigmata and trachea does not enter into the question. All means, therefore, which as far as possible avoid damping of the skin, without at the same time injuriously affecting the skin afford the best indication of therapeutic success. In straw acari may be found in all stages of development and as eggs. The author sought to tackle the acari through their food and gave the dogs injections of neosalvarsan sodium. The effect on the acari and their nourishment derived from the substratum was negative, even after four weeks' observation.

Freezing of the skin with ethylchloride spray, apart from the expense, brought no success in the squamous and pustular forms of the complaint. With xylol and combinations of xylol with spirit and providoform isolated living acari were killed immediately by both preparations, but the actual use of these remedies was not so successful in practice.

Vaeth, Dr., Heidelberg.—Aulin as an Acaricide.—*D.T.W.*, April 10th, 1926.

This drug is manufactured by C. F. Boehringer & Son, of Mannheim. It is a sulphur preparation from the Xanthogen group, which comes into trade as a 10 per cent. solution in vaseline oil with the addition of a small quantity of tetralin. Its external use causes no irritation or discolouration of the skin and it possesses no unpleasant smell. In weak concentration it kills staphylococci and lice; fleas and mites are destroyed by a two per cent. solution. By the 10 per cent. solution both parasites and eggs are destroyed. Very good success has been obtained with aulin in four dogs with acariasis after four to seven weeks' treatment and no return of the malady has occurred.

Reviews.

Veterinary Bulletin of the Veterinary Corps, Medical Department, U.S. Army. Vol. XVII, No. 4, April 14th, 1926.

This publication is a supplement to THE ARMY MEDICAL BULLETIN. The contents are not confined solely to Veterinary subjects, but embrace items of medical interest, including a report on cases of Trichinosis occurring in man.

A considerable portion is allotted to a survey of the system of Meat Inspection adopted by the U.S. Army—a duty which devolves upon the veterinary officers who form an integral part of the U.S. Army Medical Department.

Articles of veterinary interest are published on "Feeding City Work Horses" and "Care of the Horse's Feet and Legs." The latter by Lieut.-

Colonel R. Vans Agnew, discusses the merits of various forms of bandages and dressings for the feet of horses and mules.

The statement that " stopping " feet with clay should be used a great deal more in the U.S. Army, will not, we venture to think, meet with support of many British veterinary surgeons. Some remarks on the use of bandages wet and dry are of interest, though we are not inclined to stress the importance of this subject in the way suggested by the author.

Captain P. T. Carpenter contributes an article on " The First English Horse Show," which he traces back to 1174 in the reign of Henry III, when " noble-born " horses were exposed for sale on Fridays in order that earls, knights and barons resident in the city of London might have an opportunity to look or buy. This sounds more like the holding of a market than the competitive shows with which we are now familiar.

The bulletin covers a considerable amount of ground. The articles are well and clearly written, and speaking generally, are informative on the subjects dealt with. H.R.

Foot-and-Mouth Disease : Control by Chemotherapy. By Colonel G. K. WALKER and Mr. W. TAYLOR, Punjab Veterinary College, Lahore. Veterinary Bulletin No. 17. Department of Agriculture, Punjab, 1926.

This is an account of attempts to immunise Indian cattle against foot-and-mouth infection and to cure the disease by means of Iodine administered intravenously.

The solution used consisted of Iodine one gramme, Potassium Iodide two grammes, distilled water 300 c.c., and the dose recommended after experimental observations is 50 to 100 c.c.

The virus for inoculating the subjects of these experiments was procured from England, and its virulence was maintained by passage through guinea-pigs.

The authors advise that inoculation should be carried out during the febrile stage of the disease, if possible before the vesicular eruption appears, though, in at least one case, late treatment was found effectual.

Animals which had undergone treatment became immune for at least twenty-four days, but reinoculation with further doses of virus with a view to increasing their powers of resistance and extending the period of immunity is open to consideration.

The treated animals show no obvious lesions, their general health is little affected, and there is no appreciable loss of weight and condition.

The variation in susceptibility of individual animals, coupled with the well-known natural resistance to infection possessed by Indian cattle, render it impossible to draw any parallel between the behavious of Asiatic and British stock to this form of treatment, nor, under existing legislation, would it be allowable in this country.

These observations, however, add to our knowledge of the therapeutics of the disease, and the treatment would appear to offer a simple and effective method of dealing with outbreaks in India with the object of curtailing the serious economic loss occasioned by the presence in that country of foot-and-mouth disease.

The authors are to be commended for their interesting and instructive publication. H.R.

Notice

INTERNATIONAL HORSE SHOW.

SOME OF THE CHIEF ITEMS AT OLYMPIA.

THE fifteenth International Horse Show, to be held at Olympia from June 17th to 26th, promises to be the most successful of the series. The entries in the varied classes, from coaches to costers and from officers' chargers to Shetland ponies, are well in advance of last year and the busy box office at 12, Hanover Square, W.1, testifies to the public interest.

The gala performance is fixed for the afternoon of Monday, June 21st, when officers of several nations will jump round the course for the King George V gold trophy, while teams of three officers will compete for the Prince of Wales' International Cup on the afternoon of Thursday, June 24th. The Connaught Cup jump for British officers takes place on Friday afternoon, the 25th, and the show closes with the tests for the champion cup in which only winners in previous classes can compete. The popular scurry stakes, wherein speed as well as good jumping counts, is down for Wednesday evening, June 23rd, and the high jump will be decided on Friday evening, June 25th.

There are two coaching marathons, a visit by the Coaching Club, classes for mounted constables, trade turnouts including teams of four heavy draught horses, while the second Thursday will see the smartest of London's costers in the floral arena. There will be jumping competitions at each afternoon and evening session and preliminary judging of harness and riding classes will be held in the mornings to enable judges to work expeditiously in the afternoons.

Personal

The following officers have been selected for veterinary appointments in the Colonial Service :—

Mr. W. A. C. FRASER, B.V.Sc., Veterinary Officer, Fiji.

Mr. W. C. L. ORR, B.Sc., M.R.C.V.S., Veterinary Officer, Gold Coast.

Mr. F. E. JONES, M.R.C.V.S., Veterinary Officer, Northern Rhodesia.

Mr. K. D. TURNER, M.R.C.V.S., Veterinary Surgeon, Federated Malay States.

Mr. A. FULTON, M.R.C.V.S., Veterinary Officer, Gold Coast.

Mr. G. E. M. ROGAN, M.R.C.V.S., Veterinary Officer, Tanganyika Territory.

The Animal Diseases Research Association has now entered the new Institute, and the permanent address is The Moredun Institute, Gilmerton, Edinburgh.